

Extraction and characterisation of lignin from citronella grass and eucalyptus wood.

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Abstract

Lignocellulosic biomass has been acknowledged for potential use to produce chemicals and biomaterials. Lignin is the second most abundant natural polymer with cellulose being the first one, making up to 10–25% of lignocellulosic biomass. Lignin is a three-dimensional, highly cross-linked macromolecule composed of three types of substituted phenols, which include: coniferyl, sinapyl, and p-coumaryl alcohols by enzymatic polymerization, yielding a number of functional groups and linkages.

There are wide ranges of lignin sources available that is to say from non-woody plants like Citronella straws, wheat straws and woody plants like eucalyptus wood chips, pine chips. Hence, the physical properties will be different with respect to the original source and extraction method used.

Citronella grass and eucalyptus wood are believed to contain cellulosic fibres have been proposed to be a potential source of lignin for paper industry with less environmental degradation threat. The objective of this research is to extract lignin from eucalyptus wood chips and citronella straws by addition of Soda concentration followed by passing the samples in the digester. The extracted lignin then added 3% concentrated Sulphuric acid and refluxing at 100°C. The extracted lignin will be analysis by use of TGA and XRD Machines.

1.0 INTRODUCTION

1.1 Background

As the world's most abundant renewable resource, lignocellulosic biomass has been used to produce chemicals and biomaterials. Lignocellulose is low cost biomass that is abundantly available. The main constituents of a biomass are hemicellulose, cellulose and lignin. Among the three components, cellulose is the most abundant natural resource and the demand for it is steadily growing for its being environment-friendly and biocompatible nature.

Cellulose has been used in various forms ranging from wood and plant fibres to act as source of energy for applications in building materials, paper, textiles, as well as clothing today.